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On the identity of *Agabus uliginosus* (Linnaeus, 1761), with the description of a new species of *Agabus* from Russia (Coleoptera: Dytiscidae)

Заметки о видовом соответствии названия *Agabus uliginosus* (Linnaeus, 1761) и описание нового вида *Agabus* из России (Coleoptera: Dytiscidae)

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KEY WORDS: Dytiscidae, distribution, new species, *Agabus uralensis*, *Agabus uliginosus*, *Ilybius fuliginosus.*

КЛЮЧЕВЫЕ СЛОВА: Dytiscidae, распространение, новый вид, *Agabus uralensis, Agabus uliginosus*, *Ilybius fuliginosus.*

ABSTRACT. A critical evaluation of the identity of the two species names *Dytiscus uliginosus* Linnaeus, 1761 and *Dytiscus fuliginosus* Fabricius, 1792 supports the current usage of these names, i.e., *Agabus uliginosus* and *Ilybius fuliginosus* as valid names. The geographical distribution of *A. uliginosus* in eastern Europe is revised and mapped. It is shown that specimens from West Siberia, hitherto recognized as *A. uliginosus*, in fact represent the new species *A. uralensis*, known also from the Udmurtia republic, the Chelyabinsk area, and possibly also Kazakhstan. The two species are seemingly east-west vicariants on each side of longitude 52º E. In both *A. uliginosus* and *A. uralensis*, the basal apodeme of the penis is underdeveloped in teneral adults, becoming larger in the process of maturation.

РЕЗЮМЕ. Критическая оценка видового соответствия названий *Dytiscus uliginosus* Linnaeus, 1761 и *Dytiscus fuliginosus* Fabricius, 1792 подтверждает правильность принятого употребления в качестве валидных названий биноменов *Agabus uliginosus* и *Ilybius fuliginosus*. Пересмотрено географическое распространение *A. uliginosus* в восточной части Европы и приведена карта его ареала. Показано, что экземпляры из Западной Сибири, которые ранее относили к *A. uliginosus*, в действительности относятся к новому виду, *A. uralensis*, известному также из Удмуртии, Челябинской области, а, возможно, и Казахстана. По-видимому, данные два вида викарируют в западно-восточном направлении в районе 52-го меридиана. Базальная аподема пениса *A. uliginosus* и *A. uralensis* недоразвита у ювенильных (недавно вышедших из куколки) имаго и постепенно разрастается в ходе созревания гонад.

Introduction

The Holarctic subgenus *Agabus* (s. str.) Leach comprises some 30 species classified into nine species groups [Nilsson, 2001]. The delimitation of the *uliginosus*-group is problematic. Nilsson & Toledo [1999] included six species in this group, whereas Larson et al. [2000] added also the *lineatus*-group. Finally, Nilsson [2001] excluded both the *falli*- and *lineatus*-groups, leaving five species in the *uliginosus*-group, characterized by the following characters: clypeus with anterior bead more or less continuous; pronotum with anterior bead continuous and lateral bead inflated; penis without dorsal subapical spine; male anterior protarsal claw modified; and penis with basal apodeme large.

The Palearctic species *Agabus uliginosus* (Linnaeus) will here be examined in detail. The identity of this species has long been questioned. Three competing hypotheses on the identity of *Dytiscus uliginosus* Linnaeus [1761: 216], have been forwarded in the literature: (1) it is the *Agabus* species we today call *uliginosus*; (2) it is the *Ilybius* species we today call *fuliginosus*; (3) it is a mixture of both species. After the evaluation of these hypotheses we will separate *Agabus uliginosus* into two species that seemingly are east-west vicariants within the Palearctic region. The distribution of the two species in Russia will be dealt with in detail.

Material and methods

Terminology denoting genitalia orientation follows Miller & Nilsson [2003]. All records of *Agabus uliginosus* from the former Soviet Union known to us are included. Decimal degrees of latitude and longitude and spelling of most geographical names were taken from MS Encarta 2003 digital world atlas. Coordinates for each locality were centered within the smallest geographic unit given in the source. The less precisely known coordinates are marked with an asterisk (*).

Position of listed localities:

Baltischport (= Paldiski)	59.351 N, 24.061 E
Berezinskiy Biosphere Reserve	*54.706 N, 28.358 E
Bologoye	57.870 N, 34.056 E
Cheka hill (4 km N of)	52.626 N, 59.105 E
Chemerin	52.301 N, 25.764 E
Chuvashia	*55.466 N, 47.032 E
Derkul river	*49.204 N, 39.591 E
Glubokoye lake	*55.774 N, 36.129 E
Gorkiy (= Nizhniy Novgorod)	56.316 N, 43.996 E
Kaluga (province)	*54.426 N, 35.304 E
Kamenka river	60.046 N, 30.210 E
Karkaralinsk (= Qarqaraly)	49.413 N, 75.470 E
Kazan (province)	*55.796 N, 49.174 E
Kiev (province)	*50.438 N, 30.499 E
Krasnoborsk	53.745 N, 48.036 E
Krasnodonskiy (3 km WNW of)	49.184 N, 44.022 E
Lutsino (3 km W of)	55.719 N, 36.868 E
Machulishche	53.784 N, 27.565 E
Malaya Purga	56.551 N, 53.000 E
Moscow	*55.740 N, 37.649 E
Murom	55.567 N, 42.042 E
Nikolayevsk	50.026 N, 45.455 E
Pilna	55.552 N, 45.910 E
Polukarpovo	57.798 N, 35.216 E
Pugachyovo	56.593 N, 53.036 E
Sineglazovo lake	54.993 N, 61.426 E
St. Petersburg	*59.957 N, 30.362 E
Svecha	58.280 N, 47.506 E
Tarasova	*61.067 N, 42.116 E
Tolvoja (= Tolvuya)	62.511 N, 35.243 E
Vabole	56.051 N, 26.469 E
Velsk	61.067 N, 42.116 E
Venevitinovo	51.809 N, 39.380 E
Verbilki	56.535 N, 37.609 E
Vologda (district)	*59.232 N, 39.879 E
Vychegda river	*61.735 N, 51.090 E
Yaroslavl (province)	*57.956 N, 39.279 E
Yeniseysk	58.451 N, 92.166 E

Depositories:

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ZMUM — Zoological Museum of Moscow University, Russia
ZMT — Zoological Museum of the University of Turku, Finland

What is *Dytiscus uliginosus* Linnaeus?

The original description of *Dytiscus uliginosus* [Linnaeus, 1761: 216], can not falsify any of the three above-mentioned hypotheses: "*ater nitidus, antennis pedibus elytrorumque latere exteriore ferrugineis*" [black and shining; antennae, legs, and outer margin of elytra reddish]. The black colour does not fully match the *Agabus*, whereas the outer margin of the *Ilybius* is more yellow than reddish. In the following passage, Linnaeus states that the body of *uliginosus* is slightly larger than '*vix Cimicem*', i.e., the bedbug that has a length of 4.5–6 mm. This size estimate matches the *Agabus* species (6.4–7.6 mm) much better than the *Ilybius* species (10.0–11.5 mm).

The possible syntypes in coll. Linnaeus (London) do not provide any unambiguous evidence. According to Schaum [1847a: 279], one specimen each of *Agabus vitreus* (= *didymus*) and *A. abbreviatus* (= *undulatus*) are labelled as '*uliginosus*', whereas one specimen of *Ilybius fuliginosus* is placed beside them. Schaum [1847a, b] first wanted to use *uliginosus* for the *Ilybius*, whereas he later [Schaum, 1868] accepted it as the valid name of the *Agabus*. With respect to the distinct dorsal colour patterns of the two *Agabus* species, never mentioned by Linnaeus in the description, it seems far-fetched to think that these specimens had been part of the type material. They were probably labelled as *uliginosus* by Linnaeus or someone else after 1761, based on misidentification.

The interpretation of the name *Dytiscus uliginosus* Linnaeus by early authors provides a third source of evidence. As Fabricus [1792] described his *Dytiscus fuliginosus* as a new species, it seems clear that he did not view it as being identical with *D. uliginosus* Linnaeus. In all his works, Fabricius simply cited *D. uliginosus* together with the original description from Linnaeus. The identity of *fuliginosus* Fabricius as really representing the *Ilybius* has been accepted by almost all subsequent authors, the main exception being Duftschmid [1805], who argued that *Dytiscus fuliginosus* Fabricius had to represent some other, not specified, species because of the black venter and ferrugineous pronotal margins mentioned by Fabricius. Duftschmid [1805] did instead use the name *D. lacustris* Panzer for the *Ilybius*, and his description of *D. uliginosus* Linnaeus indicates that he used this name for the *Agabus*.

The four following early authors have seemingly interpreted *Dytiscus uliginosus* Linnaeus as representing the *Ilybius*, whereas all others seemingly have used the name for the *Agabus*:

Dytiscus uliginosus Linnaeus sensu Schrank, 1781: 202 vide Duftschmid [1805]; sensu Thunberg, 1792: 114 vide Schönherr [1808]; sensu Martyn, 1792: pl. 32 (2–5) vide Stephens [1829]; sensu Marsham, 1802: 416 vide Stephens [1829].

Most probably also Goeze [1777: 613] used the Linnean name for the *Ilybius* as he described it as "*Ater; antennis pedibus elytrorumque margine extimo flavo.*

Variat margine thoracis exteriore lutescente."

Goeze [1777] and Schrank [1781] are among the earliest authors to cite the species first described by Linnaeus, and therefore their opinion is of special importance. There are, however, other, even earlier, authors that more likely used the name for the *Agabus*. Scopoli [1763: 98] gave the length of *Dytiscus uliginosus* as '2 lin.', which is less than half of Schrank's [1781] '4½ lin.' Including some national variation, a 'line' is about 2.12–2.25 mm, but comparing some of the other lengths given by Scopoli [1763], it seems his lines may sometimes be closer to 3 mm. In any case, the lesser size suggests that Scopoli was referring to something not larger than the *Agabus*. O.F. Müller [1776], on the other hand, listed *Dyticus uliginosus* with a diagnosis that is more or less identical to that of Linnaeus, and also described the new species *D. foetidus*. The diagnosis of the latter "*ferrugineus, supra niger; margine thoracis elytrorumque extimo flavo*" opens the possibility that he was describing *Ilybius fuliginosus*, as first suggested by Illiger [1801] and Schönherr [1808]. Most later authors have dealt with *foetidus* as a *nomen dubium*, the only recent exception being Ádám [1996], who accepted its priority over *fuliginosus*.

Clairville [1806: fig. XXVIII: Bb] provided an illustration of *Hydrachna uliginosa* F. that may well represent the *Agabus*, but not the *Ilybius*. Sturm's [1834: pl. CXCVI: B] illustration of *Colymbetes uliginosus* F.* no doubt matches the current concept of the *Agabus* species.

The interpretation of the name *Dytiscus uliginosus* Linnaeus by early authors thus can give no clear evidence on the true identity of the species. Accepting a majority criterion, the information at hand suggests that the name should better be used for the *Agabus*.

The third hypothesis says that *Dytiscus uliginosus* Linnaeus was based on a mixed type series in which both the *Agabus* and the *Ilybius* species were represented. It seems that Schaum [1868] and Gemminger & Harold [1868] were the first authors to cite *Dytiscus uliginosus* Linnaeus under both the *Agabus* and the *Ilybius* species, and later authors like Seidlitz [1887] added '*ex parte*' after the *fuliginosus* synonym. This was also the solution chosen by Zimmermann [1920] in his world catalogue. Normally, such a situation is solved by the selection of a lectotype, the identity of which determines to which species the name should be applied. But the mixed type series seems not to exist now and may have never existed. Considering the different size and colour of the two species, it seems unlikely that Linnaeus did not separate them.

Another way of mixing hypotheses 1 and 2 was first presented by Clark [1855] and Thomson [1856]. They both accepted Schaum's [1847a] view that *uliginosus* was first used by Linnaeus for the *Ilybius* species, and then later used for the *Agabus* species by Fabricius and others. Violating the principle of homonymy as we know it today, they used the name *uliginosus* as valid for both species, attributing the *Ilybius* to Linnaeus and the *Agabus* to Fabricius. The two-*uliginosus* system was used by a few authors for about 20 years, and was after that replaced with the '*ex parte*' view.

In conclusion, there are the following possible solutions to the '*(f)uliginosus* problem', depending on the hypothesis accepted:

(a) If hypothesis 1 is accepted, the *Agabus* species should remain *A. uliginosus*, and the *Ilybius* species should either (aa) remain *I. fuliginosus* or (ab) take the name *I. foetidus.*

(b) If hypothesis 2 is accepted, the *Agabus* species takes the oldest available name *A. aeratus* (Stephens, 1828), and the *Ilybius* species takes the name *uliginosus*.

As for hypothesis 3, it seems unacceptable, because the two species differ considerably in size and coloration, and Linnaeus was unlikely to mix them.

Since neither of the hypotheses 1 or 2 can be rejected by falsification, it is best to accept the one that is the best for stability, i.e., hypothesis 1. Moreover, hypothesis 1 is preferable also according to the majority criterion. This hypothesis was also supported by Balfour-Browne [1950], who reviewed some of the evidence.

As the valid name of the *Agabus* species has never been considered anything but *uliginosus*, it seems obvious that this name has to be retained in line with 'solution a'. Following the principle of priority, the name *uliginosus* has to be attributed to Linnaeus in order to be valid. This should really pose no major problem to anyone, as the collected counter-evidence on the identity of the Linnaeus species is not very strong. As for the original description, it may have been based on a very dark specimen (such specimens sometimes do occur); in this case, it fully fits the species we know today as *Agabus uliginosus*.

It seems equally obvious that the valid name of the *Ilybius* species has to be *fuliginosus* (Fabricius). This name has been in continuous use since 1792, and has never been applied to any other species. A few authors used the name *uliginosus* for this species between 1855 and 1877; Panzer, Illiger, and Duftschmid called it *lacustris* between 1795 and 1806. The name *foetidus* O.F. Müller had been neglected and in practice dealt with as a *nomen dubium* for almost 200 years when Ádám [1996] tried to reintroduce it. As Ádám's action was not based on any new evidence, the O.F. Müller name has to remain a *nomen dubium*. As the O.F. Müller collection never existed or is totally lost, the identity of *foetidus* remains unsolved as no estimate of body size was given in the original description.

Thus, 'solution aa' is preferable to all the others. It is here summarized in the following lists of citations for *Agabus uliginosus* and *Ilybius fuliginosus*.

Agabus uliginosus (Linnaeus, 1761)

Acatodes uliginosus (Linnaeus, 1761): Ádám, 1996: 57.
Agabus reichei Aubé, 1837: 138 (orig. descr., ? France).

* In both cases, "F." may stand for "sensu Fabricius", not implying the *auctor*.

Agabus uliginosus (Linnaeus, 1761): Erichson, 1832: 37, 1837: 160; Aubé, 1837: 136; Schiødte ,1841: 474; Sturm, 1843: 40; Fairmaire & Laboulbène, 1855: 189; Jacquelin du Val, 1857: 36; Schaum, 1868: 105; Gemminger & Harold, 1868: 457 (syn. *reichei*); Seidlitz, 1872: 59, 1887: 90; Bedel, 1881: 272; Sharp, 1882: 507; Heyden, 1883: 31, 1891: 63; Ganglbauer, 1891: 494; Reitter, 1908: 224; Zimmermann, 1920: 175.

Agabus uliginosus (Linnaeus) sensu Paykull, 1798 & Fabricius, 1801: Clark, 1855: 4855; Thomson, 1856: 215; Dalla Torre, 1877: 63.

Colymbetes dispar Bold, 1849: xxiv (orig. descr., England, Durham county, Boldon Flats).

Colymbetes uliginosus (Linnaeus, 1761): Stephens, 1828: 78, 1829b: 407, 1839: 73; Sturm, 1834: 110 + fig. 196b.

Colymbetes uliginosus var. *aeratus* Stephens, 1828: 79 (orig. descr., England, Windsor).

Dyticus uliginosus O.F. Müller, 1776: 71 (orig. descr., Denmark and Norway).

Dyticus uliginosus Linnaeus, 1761: Illiger, 1801: 74.

Dytiscus uliginosus Linnaeus, 1761: 216 (orig. descr., Sweden), 1767: 667; Scopoli, 1763: 98; Fabricius, 1775: 232, 1781: 295, 1787: 191, 1792: 194, 1801: 266; Gmelin, 1790: 1950; Olivier, 1791: 313; Panzer, 1795: 77; Paykull, 1798: 212; Duftschmid, 1805: 267; Schönherr, 1808: 22; Gyllenhal, 1808: 512; Zetterstedt, 1828: 221, 1838: 134.

Gaurodytes uliginosus (Linnaeus, 1761): Zimmermann, 1919: 212, 1934: 170; Falkenström, 1929: 167; Zaitzev, 1953: 242 (in part; see description of new species below).

Hydrachna uliginosa (Fabricius): Clairville, 1806: 180 + fig. XXVIII: Bb.

Ilybius fuliginosus (Fabricius)

Colymbetes fuliginosus (Fabricius, 1792): Stephens, 1828: 67, 1829b: 49, 1839: 73; Sturm, 1834: 102; Lacordaire, 1835: 317; Laporte, 1840: 161.

? *Dyticus foetidus* O.F.Müller, 1776: 71 (orig. descr., Denmark and Norway); Gmelin, 1790: 1955.

Dytiscus fuliginosus Fabricius, 1792: 191 (orig. descr., Germany); 1801: 263; Paykull, 1798: 210; Illiger, 1801: 70; Schönherr, 1808: 17; Gyllenhal, 1808: 495; Zetterstedt, 1838: 131.

Dytiscus lacustris Panzer, 1796: 14 (orig. descr., Germany); Illiger, 1798: 258; Duftschmid, 1805: 261.

Dytiscus uliginosus Linnaeus, 1761 (misident.): Goeze, 1777: 613; Schrank, 1781: 202; Thunberg, 1792: 114; Martyn, 1792: pl. 32 (2–5); Marsham, 1802: 416.

Ilybius foetidus (O.F. Müller, 1776): Ádám, 1996: 56.

Ilybius fuliginosus (Fabricius, 1792): Erichson, 1837: 156; Aubé, 1837: 125; Schiødte, 1841: 485; Sturm, 1843: 40; Fairmaire & Laboulbène, 1855: 188; Jaquelin du Val, 1857: 37; Schaum, 1868: 90; Bedel, 1881: 248; Sharp, 1882: 556; Heyden, 1883: 31, 1891: 64; Seidlitz, 1887: 98; Ganglbauer, 1891: 487; Reitter, 1908: 226; Scholz, 1915: 246; Zimmermann, 1919: 217, 1920: 190; Zaitzev, 1953: 281.

Ilybius uliginosus (Linnaeus, 1761) (misident.): Schaum, 1847b: 1895; Clark, 1855: 4853; Thomson, 1856: 224; Seidlitz, 1872: 55; Dalla Torre, 1877: 63.

Ilyobius fuliginosus (Fabricius, 1792): Gemminger & Harold, 1868: 451.

Taxonomy of *Agabus uliginosus*

By now, *Agabus uliginosus* has been cited from most of Europe, Kazakhstan and Siberia [Nilsson & Holmen, 1995; Nilsson, 2003]. After the study of available material from Russia, our conclusion is that specimens from Udmurtia in west-central European Russia, the South Urals, and Siberia standing as *A. uliginosus* in fact belong to an undescribed species. In order to document the distribution of the true *A. uliginosus* and the new species, the known localities from East Europe and Asia are listed below and shown on a map (Fig. 1).

Agabus uliginosus (Linnaeus, 1761)

Agabus uliginosus (Linnaeus, 1761): Lebedev, 1906: 368 (Kazan); Zaitzev, 1906: 89 (Novgorod province), 1907: 98 (St. Petersburg province, Kamenka etc.; Novgorod province; Yaroslavl province), 1908: 68 (Novgorod province, Bologoye), 1928: 14 (Saratov area, Nikolayevsk, leg. Sakharov), 1930: 17 (Kaluga province); Jacobson, 1908: 429 (Olonets province [Karelia], Yaroslavl province, Kazan province [Tatarstan] to Petrokov, Volhynia, Kiev province, Saratov province, Yeniseysk province); Pomerantsev, 1908: 442 (Vologda province, Velsk, Tarasova); Kuzin, 1923: 101 (env. Murom); Lindberg, 1933: 207 (Estonia, Baltischport); Zakharenko & Moroz, 1988: 286 (Minsk area, Machulishche; Brest area, Chemerin); Shaverdo, 1995: 37 (Belarus, Berezinskiy Biosphere Reserve); Alexandrovitch et al., 1996: 14 (Belarus); Egorov & Feodorov, 1998: 35 (Chuvashia); Yuferev, 2001: 125 (Kirov area, Svecha village; male genitalia dissected by junior author); Prokin & Tsurikov, 2001: 63 (Voronezh area); Cibulskis, 2002: 72 (Latvia, Vabole, 1997.VIII.17).

Gaurodytes uliginosus (Linnaeus, 1761): Poppius, 1899: 25 (Russian Karelia, Tolvoja); Zaitzev, 1953: 242 (in part; European USSR south to Kiev and Saratov areas); Anufriyev et al. 1981: 88 (Gorkiy area, Gorkiy, Pilna); Isajev, 1994: 28 (Ulyanovsk area, Krasnoborsk); Mokeyeva & Negrobov, 1998: 57 (Voronezh area, Usmanka river, Venevitinovo); Rogovtsova, 1998: 143 (Komi republic, Vychegda river).

Unpublished localities from museum material:

RUSSIA: Moscow province, Ruza district, Glubokoye lake, 1912.V.13, leg. N. Plavilstshikov (ZMUM); Moscow area, env. Zvenigorod, 3 km W of Lutsino, 1974.V.26, leg. Zhirkov (ZMUM); Moscow area, Taldom district, Verbilki railway station, 1999.VI.12, leg. N.B. Nikitsky (ZMUM); Moscow area, Moscow (ZMUM); Vologda province; Vologda district, 1883.VII.15 (ZMUM); Volgograd area, 3 km WNW of Krasnodonskiy, 2002.V.11, leg. A. Nilsson & J. Bergsten (CNU); Tver area, Udomlya district, 15 km SE Udomlya, Polukarpovo, 2004.VI.26, leg. S. Glagolev; 2004.VI.28, leg. P. Petrov (ZMUM).

UKRAINE: Luhansk area, Belovodsk district, Derkul river, 1951.VI.03, leg. Belgovskiy (ZMUM).

Stephens [1828] named a specimen from England with a stronger metallic sheen as var. *aeratus*. Aubé [1837] described two specimens having more convex shape and elytra slightly dilated before the middle as *Agabus reichei*. The geographical origin of the syntypes was in doubt, but most probably they had been collected in France.

The female of *A. uliginosus* is dimorphic, with the more shiny male-like form being more widespread. The dull female form characterized by deeper and coarser dorsal reticulation is known from Great Britain and Sweden [Balfour-Browne, 1950]. This form was described by Bold [1849] as *Colymbetes dispar*.

Queney [2002] described a rufinistic form of *A. uliginosus* from the French Pyrénées-Orientales as '*oreophilus*', including photos of the male foreclaws and genitalia. He gave this form a Latin name contrary to current practice; the names of such taxa are not regulated by the Code.

The larva of *A. uliginosus* was described by Galewski [1968].

Agabus uralensis Nilsson & P. Petrov **sp.n.**

Agabus reichei Aubé, 1837 (misident.): Heyden, 1880: 56 (Jenisseisk).

Gaurodytes reichei (Aubé, 1837) (misident.): Sahlberg, 1880: 58 (Jenisseisk, VI.20, 2 ex. coll. Sahlberg).

Gaurodytes uliginosus (Linnaeus, 1761) (misident.): Zaitzev, 1953: 242 (in part; Krasnoyarsk); ? Konev, 1976: 57 (Karkaralinsk).

Type locality: Russia, Siberia, Krasnoyarsk territory, Yeniseysk.



Fig. 1. Known records of *Agabus uliginosus* (dots) and *A. uralensis* (squares) from eastern Europe and Asia. The Kazakhstan record of *A. uralensis* (marked with "?") has not been verified.

Рис. 1. Места находок *Agabus uliginosus* (кружки) и *A. uralensis* (квадраты) в восточной части Европы и Азии. Указание *A. uralensis* для Казахстана (отмечено "?") нуждается в проверке.

TYPE MATERIAL: Holotype ♂ in ZMT labelled: "Jenisejsk", "845.", "G. Reichei Aubé", "J. Sahlb.", "coll. Sahlb.", and our holotype label. Paratypes 3 ♂♂ 2 ♀♀: 1 ♂ in ZMT labelled as holotype (but without identification label); 1 ♂ in ZMUM labelled "Udmurtia 4.05.02, Malaya Purga district, Pugachyovo village, floodplain, S.V. Dedyukhin" (here translated from Russian); 1 ♀ in ZMUM labelled "Udmurtia, Malaya Purga district, Malaya Purga village, June 1990, S. Dedyukhin" (both Russian and English labels); 1 ♂ in ZMUM labelled "Chelyabinsk area, Kizilskoye district, 4 km N of Cheka hill, puddle on road, 30.VI.2002, P. Petrov" (here translated from Russian); 1 ♀ in ZMUM labelled "Chelyabinsk area, Kopeysk city, env. Sineglazovo lake, P. Petrov, 21.06.1997" (here translated from Russian).

DIAGNOSIS. Similar to *A. uliginosus*, from which it differs chiefly in the smaller body size, shorter penis with apex evenly tapered to acute apex, and narrow parameres.

DESCRIPTION. Body and penis measurements as in Tab. 1. Body broadly oval with dorsal surface strongly convex; lateral outline continuous. Head black; area anterior to eyes and 2 posteromedial spots rufous. Antennnae and palpi rufotestaceous; antennomere 11 brown in distal half. Pronotum black; lateral margin broadly rufotestaceous. Elytron brown to piceous; basally and laterally lighter. Ventral surface black; hypomeron and epipleuron rufotestaceous; metacoxae posteromedially and posterior margins of abdominal sterna rufous. Legs rufous. Clypeus with anterior bead medially more or less fragmented. Dorsal body surface shiny, with a slight metallic sheen. Dorsal reticulation normally finely impressed; meshes of unequal size and shape; frequently with micropunctures at intersections. Elytron with linear series of punctures evident. Broad pronotum with lateral bead inflated. Prosternal process narrowly pointed; strongly convex, subcarinate; setose; lateral bead well-defined. Metasternal "wing" rather broad (Tab. 1). Metatarsomere 1 with 2–5 posterodorsal and 3–5 posteroventral spines. Longer metatibial spur with weak longitudinal striation. Male with raised ridge sublaterally between sterna 2 and 3. Male pro- and mesotarsomeres 1–3 strongly dilated; anterior protarsal claw with strong medial expansion. Male metatarsomeres 1–4 with ventral setal fringe. Penis with basal apodeme enlarged in mature specimens (Fig. 3), underdeveloped in teneral specimens; paramere narrow and basally striate, with dense apical setal fringe (Fig. 5).

NOTE. Our study of *Agabus uliginosus* was initiated by the senior author's examination of a teneral male collected in the Volgograd area by O. Brekhov. As the penis of this male did not have the enlarged basal apodeme typical for *A. uliginosus*, the identity seemed problematic. After the study of a larger material, our conclusion is that the basal apodeme develops later than the rest of the penis, in both *A. uliginosus* and *A. uralensis*. This observation may apply to more species of Dytiscidae, as it was observed also in *Hygrotus tumidiventris* (Fall, 1919) [Bergsten, in litt.].

DISTRIBUTION. All examined material of the new species is from Russia, including the Udmurtia republic, the

Tab. 1. Selected measurements (in mm) and ratios of *Agabus uliginosus* and *A. uralensis*. Data for *A. uliginosus* based on specimens from Sweden and the Russian Volgograd area combined.

Табл. 1. Отдельные промеры (в мм) и пропорции *Agabus uliginosus* и *A. uralensis*. Данные для *A. uliginosus* приведены на основе материала из Швеции и России (Волгоградская область).

	A. uliginosus						*A. uralensis*					
	male			female			male			female		
	N	x	SD	N	x	SD	N	x	SD	N	x	SD
TL–h	6	6.87	0.19	5	6.50	0.11	4	6.04	0.16	2	6.08	0.12
PrW	6	3.32	0.06	5	3.15	0.04	4	2.98	0.05	2	2.92	0.00
PeL	3	1.27	0.01				2	0.91	0.01			
WC/WS	6	2.44	0.17	4	2.34	0.29	2	2.69	0.20	2	2.53	0.04

TL–h — total length without head; PrW — pronotum width; PeL — penis length (from apex to distal dorsal corner of basal part); WC/WS — ratio of width of metacoxa to width of metasternum along oblique line drawn at right angle to anterior margin of metacoxa at point of metacoxa–mesocoxa closest approximation; N — number of specimens; x — mean; SD — standard deviation.

TL–h — общая длина (без головы); PrW — ширина переднеспинки; PeL — длина пениса (от вершины до дистального дорсального угла базальной части); WC/WS — соотношение ширины заднего тазика и ширины боковой лопасти заднегруди, измеренных по прямой, проведённой через точку наибольшего сближения задних и средних тазиков перпендикулярно переднему краю задних тазиков; N — число экземпляров; x — среднее арифметическое; SD — стандартное отклонение.

Chelyabinsk area, and the Krasnoyarsk territory. As Konev's [1976] record from Karkaralinsk in Kazakhstan falls within the longitudinal range of *A. uralensis*, we suggest that it represents this species and not *A. uliginosus*. Consequently, *A. uliginosus* is restricted to Europe, whereas *A. uralensis* is recorded from Europe, the Urals, West Siberia (eastern limits, sometimes attributed to East Siberia), and probably also Kazakhstan. The two species are then east-west vicariants on each side of longitude 52º E.

ETYMOLOGY. The specific epithet refers to the fact that the range of the new species includes the Urals, whereas the eastern limits of the *A. uliginosus* range probably lie west of the Urals.

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Figs. 2–5. Male genitalia: 2, 4 — *Agabus uliginosus*, Sweden, Halland province, Vallda Sandö; 3, 5 — *A. uralensis*, paratype from Udmurtia; 2–3 — penis, lateral view; 4–5 — paramere, external view. Scale bar 0.5 mm.

Рис. 2–5. Гениталии самцов: 2, 4 — *Agabus uliginosus* из Швеции, лен Халланд, п-ов Санде у п. Вальда; 3, 5 — *A. uralensis*, паратип из Удмуртии; 2–3 — пенис, вид сбоку; 4–5 — парамеры, снаружи. Масштабный отрезок — 0.5 мм.

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